Ground Network Services Overview

Ground Network Services

- The GN is made up of two main components, orbital and sub-orbital operations.
- Support organizations include Engineering, Logistics, and Administration
- Customers for the GN range from NASA and other Government agencies to commercial companies and foreign entities.
- The following companies are associated with the NASA Ground Network.
  - HTSI - Management and Technical direction
  - LM - Engineering Management
  - GHG - Operations, Maintenance, and some Engineering
  - CSC - Software Engineering
  - BAE - Logistics
  - MRC - Property Management
  - TSI - Hardware Engineering
  - Hammers - Hardware Engineering
  - Omitron - Security Engineering

Ground Network Overview

- The NASA Ground Network orbital portion is comprised of the following stations:
  - Alaska Synthetic Aperture Radar Facility - Fairbanks, Alaska
    - 10 Meter S and X-Band
    - 11 Meter S and X-Band
  - Alaska Ground Station - Poker Flat, Alaska
    - 11 Meter S and X-Band
    - 5 Meter S-Band Low Earth Orbiter Terminal(LEO-T)
    - 8 Meter S-Band Transportable Orbital Tracking System(TOTS)
  - Bermuda Tracking Station - Cooper's Island, Bermuda
    - Station closed for operations
  - McMurdo Ground Station - McMurdo Station, Antarctica
    - 10 Meter S and X-Band
    - 10 Meter McMurdo TDRS Relay System(MTRS)

Ground Network Overview

- Merritt Island Launch Annex - Merritt Island, Florida
  - 9 Meter S-Band (2)
  - STS UHF Air-to-Ground Voice (2)

- Ponce De Leon - Ponce De Leon, Florida
  - 4.3 Meter S-Band
  - STS UHF Air-to-Ground Voice Omni

- Santiago Tracking Station - Santiago, Chile
  - 9 Meter S-Band
  - SATAN VHF

  - Wallops Ground Station - Wallops Island, Virginia
    - 11 Meter S and X-Band
    - 8 Meter S-Band Transportable Orbital Tracking System(TOTS)
    - 5 Meter S-Band Low Earth Orbiter Terminal(LEO-T)
    - 6 Meter/7.3 Meter S and L-Band
    - SATAN VHF
    - STS UHF Air-to-Ground Voice

- There are additional commercial stations in the mix:
  - Space Data Services, Archipelago of Svalbard, Island of Spitzbergen, Town of Longyearbyen
    - Two 11 Meter S and X-Band
    - One 13 Meter S and X Band
  - DataLynx Services, Poker Flat, Alaska
    - 11 Meter S and X Band

- The GN supports a suite of approximately 40 spacecraft including STS

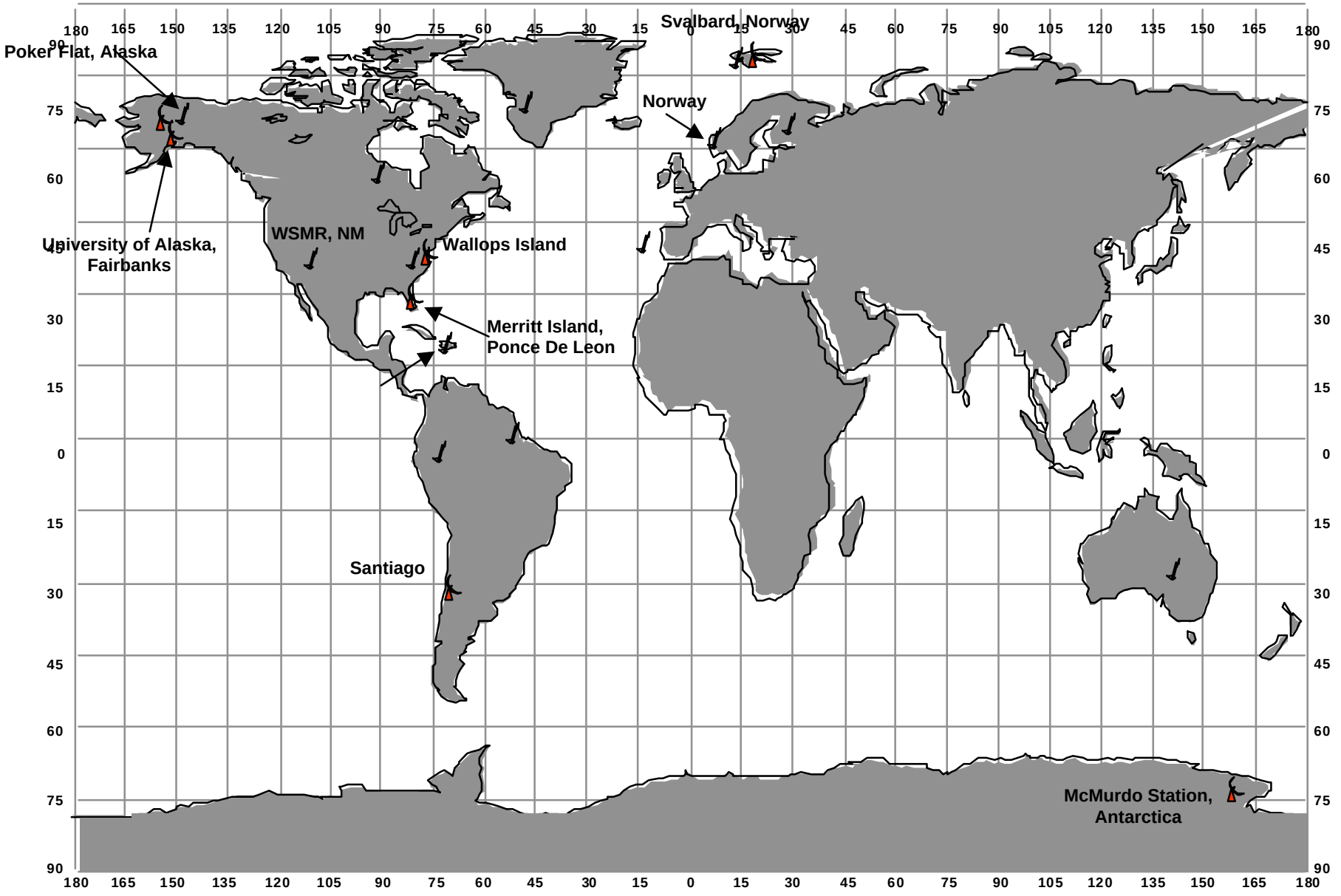
Ground Network Overview

- The sub-orbital portion of the GN is comprised of the following elements:
  - Wallops Telecommunications Instrumentation
    - Data Acquisition activities from a variety of apertures
    - Data routing between support assets
    - Mobile support group
    - Timing and command destruct
  - Wallops Radar Instrumentation
    - Fixed precision Radars
    - Mobile C Band
    - Surveillance Radar
  - Wallops Control Center and Data Reduction Facilities
    - Launch control displays
    - Command destruct capability

- Wallops Optical, Photographic, and Video Facilities
  - Fixed camera sites
  - Mobile camera sites
  - Photographic lab
- Wallops Meteorological Services Facility
  - Surface Observations
  - Weather forecasting office

- GN Support Elements
  - GN Services Management
    - Overall GN management activities
  - GN Engineering Center
    - Systems and sustaining engineering activities
  - GN Material Cost Center
    - Collection point for all material costs

Ground Network Overview



Ground Network Overview - GN Key Operations Goals

- Safety
  - Personnel
  - Mission
  - Equipment
- Mission Success
  - Spacecraft health and safety
  - Data collection and delivery
  - Performance at or above metric requirements
- Cost Control/Reduction
  - Continue effort to identify candidate actions
  - Continuous improvement efforts

Ground Network Overview - GN Commercialization

- Commercialization efforts are complete in Norway
  - Space Data Services

- Commercialization process is underway at AGS
  - DataLynx

- Objectives are to reduce the “Price Per Unit of Service” through best business practices
  - Focus on “Buy” and “Sell” opportunities
    - “Buy” commercial services over “Make” decisions
    - “Sell” available capacity to new customers

- MILA/PDL/BDA Commercialization
  - Potential commercial sites and providers identified
  - RFO was released June 1

SGS 11.3-meter

MGS 10-meter

ASF 11.3-meter

WGS 11.3-meter

AGS 8-meter TOTS#1

LEO-T